James Adam

2

THE RELIGIOUS IMPROVEMENT OF AWFUL EVENTS.

A

SERMON

PREACHED AT BLACKLEY, SEPT. 21, 1777,

ON OCCASION OF A

SHOCK OF AN EARTHQUAKE,

WHICH HAPPENED THE PRECEDING LORD's DAY.

TO WHICH IS PREFIXED,

THE THEORY OF EARTHQUAKES

FROM SIR ISAAC NEWTON, DR. STUKELEY, AND OTHERS.

BY JOHN POPE.

15

Χθων σεσαλευται·
Βρυχια δ' ηχω παραμυκαται
Βρονης· —— κ, τ, λ.
Ξυντεταρακται δ' αιθηρ ποντω.

ÆSCHYLUS.

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MDCCLXXVII.

BRITISH MUSEUM

TO

THE SOCIETY

OF

PROTESTANT DISSENTERS

AT BLACKLEY,

THE FOLLOWING DISCOURSE,

AS A

TESTIMONY OF GRATITUDE AND ESTEEM,

IS

RESPECTFULLY INSCRIBED,

BY

THEIR SINCERE FRIEND

AND

AFFECTIONATE PASTOR,

JOHN POPE.

THE

THEORY OF EARTHQUAKES.

AS the chief deſign of the following Diſcourſe is the religious improvement of awful events, and of that in particular which has thrown many of the inhabitants of this county into great conſternation; I cannot think it completed, without prefixing a ſhort account of the moſt probable philoſophical theories which have been formed concerning the cauſes of ſuch alarming occurrences. For though it is the buſineſs of religion to refer all things to a Divine Original; and the common events of life themſelves cannot be accounted for without an Almighty Cauſe; yet to inveſtigate their progreſs, and trace their connexion with inferior and ſubordinate cauſes, is not only highly pleaſing, but ſubſervient to religion itſelf; as it convinces us ſo much the more powerfully of the Divine Agency, by diſplaying the order and regularity in which this agency is exerted. From hence we learn, that the moſt extraordinary events are parts of one great plan, and ariſe from general laws; without which, even the common advantages of human life could not poſſibly be obtained. And that, therefore, to complain of Heaven on account of ſeeming deviations is highly unjuſt and unreaſonable; ſince they appear to have ſo cloſe a connexion with the moſt important goods we enjoy.

To enlarge indeed on all the advantages which may reſult from this manner of contemplating the works of nature, will carry me too from the deſign of this Eſſay. One remark however ought not to be omitted: and that is, that by this we are led at once to the admiſſion of the ennobling and comfortable principle of final cauſes. From a view of the regular ſeries of events, and the ſtrict relation between thoſe which are the moſt extraordinary, and thoſe more uſual ones by which we are furniſhed

furniſhed every day with the greateſt advantages, we learn that the former are appointed in ſubſerviency to the latter, and that the very terrors with which they are accompanied are intended with the moſt ſalutary deſigns. By thus accuſtoming ourſelves to regard the various appearances of nature, as all forming one harmonious whole, in which nothing is disjointed, nothing accidental, the alarm which uncommon events would otherwiſe occaſion, will naturally abate; and we ſhall acquire, in the midſt of their terrors, that calmneſs which is the characteriſtic of a true philoſopher, and the great ornament of a man and a chriſtian.

The opinions which philoſophers have entertained concerning the cauſes of earthquakes may be reduced to two general heads. 1ſt. Thoſe which attribute them to the fermentation of ſulphureous particles exiſting in the bowels of the earth; and 2dly. Thoſe which derive them from an electrical fluid acting violently in the earth, or the atmoſphere, or in both.

The firſt of theſe hypotheſes has received the ſanction of Sir Iſaac Newton himſelf. And the argument by which it is ſupported, is taken chiefly from the elaſticity of the air, and the exiſtence of cavities in the bowels of the earth.

That the earth is full of ſuch cavities is argued from the obſervations which have been made by thoſe who have dug into it; miners of all ſorts meeting with many of them. Now theſe abounding in combuſtible ſubſtances, ſuch as thoſe of a nitrous, ſulphureous and mineral nature; when two or more of theſe meet together, they contract a heat and ferment; and the air which they contain, and by which they are ſurrounded, becoming highly rarified, they expand and burſt; and meeting with obſtacles in their paſſage, they cauſe violent convulſions in thoſe parts of the earth which are near them: ſometimes breaking out in flames, in which caſe this phenomenon is called a *volcano*; and at other times cauſing a ſhock from the part they occupy to the ſurface itſelf, attended with a noiſe reſembling thunder; to which laſt event is given the name of *earthquake*.

In confirmation of this theory the following experiment is adduced. Take equal quantities of ſulphur and ſteel filings; work them together with water into a paſte; then having put this compound into the earth, it will begin to ferment, and in a few hours after ſhake and tear up the ground about it, burſting forth into flames, in the manner of an earthquake or volcano.

So a mixture of the nitrous acid and eſſential oils will produce flame;

flame; gun-powder, and other nitrous compoſitions, when fired in great quantities, will cauſe a violent tremor on the earth's ſurface; and if the exploſion be made under ground, as in mines, it will raiſe it very forcibly, and deſtroy whatever oppoſes its paſſage.

It may not be improper to lay before the reader the words of Sir Iſaac himſelf. After reciting ſeveral experiments of the ſame nature as have been juſt mentioned, he proceeds thus: "By theſe experiments "compared with the great quantity of ſulphur with which the earth "abounds, and the warmth of the interior parts of the earth, and hot "ſprings, and burning mountains; and with damps, mineral coruſca-"tions, earthquakes, hot ſuffocating exhalations, hurricanes and ſpouts; "we may learn that ſulphureous ſteams abound in the bowels of the "earth, and ferment with minerals; and ſometimes take fire with a "ſudden coruſcation and exploſion; and if pent up in ſubterraneous "caverns, burſt the caverns with a great ſhaking of the earth, as in "ſpringing of a mine. And then the vapour generated by the explo-"ſion, expiring through the pores of the earth, feels hot and ſuffocates, "and makes tempeſts and hurricanes, and ſometimes cauſes the land "to ſlide, or the ſea to boil, and carries up the water thereof in drops, "which by their weight fall down again in ſpouts." *

This hypotheſis was generally admitted, till the diſcovery of the chief properties of the electrical fluid. It then began to be ſuſpected that effects of this nature could not be entirely attributed to a ſuppoſed fermentation in the ſulphureous particles contained in the earth; but might be accounted for more juſtly from the action of this fluid. And the diſcovery which Dr. Franklin had made of the identity of lightening and electricity, added to the reſemblance which there appears to be between the principal phenomena attending earthquakes, volcanos, water-ſpouts, and thoſe which are obſervable in electrical experiments, led to a probable opinion, that they might be all referable to the ſame cauſe, and differed no otherwiſe, than that lightening might be the effect of the electric fluid in the atmoſphere, and earthquakes of the ſame fluid either in or upon the earth.

Of the philoſophers who have embraced this ſentiment, Dr. Stukeley ſeems to have been the firſt. His principal arguments in favour of it are the following:

* Newt. Optics, p. 354.

*1 That there is no evidence of any remarkable cavernous ſtructure of the earth, but that, on the contrary, there is rather reaſon to preſume that it is in a great meaſure ſolid, ſo as to leave little room for internal changes, and fermentations within its ſubſtance; nor do coal-pits, he ſays, when on fire, ever produce any thing reſembling an earthquake.

2. In the earthquake at London, in March 1749, there was no ſuch thing as fire, vapour, ſmoke, ſmell, or an eruption of any kind obſerved, though the ſhock affected a circuit of thirty miles in diameter. This conſideration alone of the extent of ſurface ſhaken by an earthquake, he thought ſufficient to overthrow the ſuppoſition of its being owing to the expanſion of any ſubterraneous vapours. For as ſmall fire-balls burſting in the air propagate a ſulphureous ſmell to the diſtance of ſeveral miles, it cannot be ſuppoſed, that ſo immenſe a force acting inſtantaneouſly on that compaſs of ground ſhould never break the ſurface of it, nor become diſcoverable either to the ſight or the ſmell. Beſides, that the operation of ſuch a fermentation would be many days in continuance, and the evaporation of ſo much inflammable matter would require a long ſpace of time. That ſuch an effect therefore ſhould be produced inſtantaneouſly can be accounted for by electricity only, which acknowledges no ſenſible tranſition of time, no bounds.

3. If vapours, and ſubterraneous fermentations, exploſions, and eruptions were the cauſe of earthquakes, they would abſolutely ruin the whole ſyſtem of ſprings and fountains, wherever they had once been; which is contrary to fact, even when they have been frequently repeated. Even in the earthquake in Aſia Minor, A. D. 17, which deſtroyed thirteen great cities, and ſhook a maſs of earth three hundred miles in diameter, nothing ſuffered but the cities; neither the ſprings nor the face of the country being injured; which indeed remains the ſame to this day.

4. That any ſubterraneous power ſufficient to move thirty miles in diameter, as in the earthquakes which happened at London, muſt be lodged at leaſt fifteen or twenty miles below the ſurface; and therefore muſt move an inverted cone of ſolid earth, the baſe of which is thirty miles in diameter, and the axis fifteen or twenty; an effect impoſſible to any natural power whatever, except electricity. So in Aſia Minor, ſuch a cone muſt have been three hundred miles in the diameter of the baſe, and two hundred in the axis; which not all the gun-powder that

* Prieſtley's Hiſtory of Electricity, p. 360—367.

has

has been made ſince the invention of it, much leſs any vapours generated ſo far below the ſurface, could poſſibly effect.

5. A SUBTERRANEOUS exploſion will not account for the manner in which ſhips, far from land, are affected during an earthquake: which ſeem as if they ſtruck upon a rock, or as if ſomething thumped againſt their bottoms. Even the fiſhes are affected. A ſubterraneous exploſion could only produce a gradual ſwell, and not give ſo quick an impulſe to the water as would make it feel like a ſtone.

FROM comparing theſe circumſtances, the Doctor ſays he had always thought that an earthquake was a ſhock of the ſame kind as thoſe which commonly occur in electrical experiments. And this hypotheſis was confirmed by the phenomena attending earthquakes; particularly thoſe of 1749 and 1750 which gave riſe to his publication.

THE weather for five or ſix months before had been uncommonly dry and warm; the wind ſouth and ſouth weſt without rain; ſo that the earth muſt have been in a ſtate peculiarly ready for an electrical ſhock. The flat country of Lincolnſhire had been under an exceeding great drought. The uncommonneſs of the firſt of theſe circumſtances, he remarks, is the reaſon why earthquakes are leſs frequently experienced in the northern than the ſouthern regions of the world; where the warmth and dryneſs of the air ſo neceſſary to electricity are more uſual. And the latter ſhews how fit the dry ſurface was for an electrical vibration; and (which is of great importance) that earthquakes reach but little below the ſurface of the earth.

BEFORE the earthquake at London all vegetables had been uncommonly forward. And electricity is well known to quicken vegetation. The aurora borealis had been frequent about that time, and, juſt before the earthquake, had been twice repeated in ſuch colours as had never been ſeen before. It had alſo removed ſoutherly, contrary to what is common in England; ſo that the Italians, and thoſe among whom earthquakes were frequent, actually foretold the earthquake. The year had been remarkable for fire-balls, lightening, and coruſcations, and theſe are rightly judged to be meteors of an electrical nature.

IN theſe circumſtances of the earth and air, nothing, he ſays, is wanting to produce an earthquake, but the touch of ſome non-electric body; which muſt neceſſarily be had *ab extra*, from the region of the air or atmoſphere. Hence he infers, that, if a non-electric cloud diſcharge its contents upon any part of the earth, in that highly electrical ſtate, an earthquake muſt neceſſarily enſue. As the diſcharge from an excited tube produces a commotion in the human body, ſo the diſcharge of

electric matter from the compaſs of many miles of ſolid earth muſt needs be an earthquake; and the ſnap from the contact the horrid uncouth noiſe attending it.

The Doctor had been informed, by thoſe who were up and abroad the night preceding the earthquake, and early in the morning, that coruſcations in the air were extremely frequent; and that a little before the earthquake, a large and black cloud ſuddenly covered the atmoſphere, which probably occaſioned the ſhock by the diſcharge of a ſhower.

A sound was obſerved to roll from the Thames towards Temple Bar before the houſes ceaſed to nod, juſt as the electrical ſnap precedes the ſhock. This noiſe (which generally precedes earthquakes) the Doctor thought could be accounted for only on electrical principles: for in a ſubterraneous eruption, the direct contrary would happen.

The flames and ſulphureous ſmells, which are ſometimes obſerved in earthquakes, might, he thought, be more eaſily accounted for, on the ſuppoſition of their being electrical phenomena, than from their being occaſioned by eruptions from the bowels of the earth.

So alſo the ſuddenneſs, and expedition of the concuſſion, it being felt at the ſame inſtant over a ſurface of 4000 ſquare miles; and the little damage alſo which earthquakes generally occaſion, ſufficiently point out what ſort of a motion it is, not a convulſion of the bowels of the earth, but an uniform vibration along its ſurface, like that of a muſical ſtring or a glaſs when rubbed on the edge with one's finger.

The circumſtance of earthquakes' chiefly affecting the ſea coaſt, places along rivers, (and I may add, ſays Dr. Prieſtley, eminences) is a farther argument of their being electrical phenomena. This is illuſtrated by a particular account of the direction in which the earthquake was conveyed.

The laſt argument he uſes is taken from the effects which it had on perſons of weak conſtitutions, who were for a day or two after it happened, troubled with pains in the back, rheumatiſms, hyſterics, and nervous diſorders; juſt in the ſame manner as they would have been after an actual electrification: to ſome theſe diſorders proved fatal.

As to the manner in which the earth and atmoſphere are put into this ſtate, which prepares them to receive ſuch a ſhock, and whence the electric matter comes, the Doctor does not pretend to determine; but thinks it as difficult to be accounted for, as magnetiſm, gravitation, and many other ſecrets of nature.

The ſame hypotheſis was advanced by Signior Beccaria, without knowing

knowing any thing of Dr. Stukeley's diſcoveries. But this learned Italian imagined the electric matter which occaſions earthquakes to be lodged deep in the bowels of the earth, agreeably to his hypotheſis concerning lightening.

* Now as it appears that the quantity of electric matter in the ſimpleſt thunder-ſtorms is ſo inconceivably great, as that it is impoſſible to be contained by any cloud or number of clouds; and as during the progreſs of a thunder-ſtorm which he obſerved, though the lightening frequently ſtruck to the earth, the ſame clouds were the next moment ready to make a ſtill greater diſcharge; it was evident, that they muſt have received at one place, the moment a diſcharge was made from them in another. Let us ſuppoſe theſe clouds ever ſo great, if the lightening proceeded only from them, the quantity muſt be leſſened by every diſcharge, and no recruits that any new clouds might bring can bear any proportion to the diſcharge which muſt enſue from the colliſion of ſo great a number as combine to form a thunder-ſtorm. It ſeems therefore moſt likely that the electric matter is continually darting from the clouds in one place, at the ſame time as it is diſcharged from the earth in another; and, conſequently, that the clouds ſerve as conductors to convey the electric fluid from thoſe places of the earth which are overloaded with it, to thoſe which are exhauſted.

† This theory being admitted, there will be little difficulty in attributing earthquakes to the ſame cauſe. For if the equilibrium of the electric matter be by any means loſt in the bowels of the earth; ſo that the beſt method of reſtoring it ſhall be by the fluid burſting into the air, and traverſing ſeveral miles of the atmoſphere, to come at the place where it is wanted; it may be eaſily imagined that violent concuſſions will be given to the earth by the ſudden paſſage of ſo powerful an agent. This, he thought, was confirmed by the flaſhes of light, exactly reſembling lightening, which have been frequently ſeen to ruſh from the top of Mount Veſuvius, at the time that aſhes and other light matters have been carried out of it into the air, and diſperſed uniformly over a large tract of country. And it is well known that volcanos have a near connexion with earthquakes.

A rumbling noiſe like thunder, and flaſhes of light riſing from the ground, have been generally obſerved to attend earthquakes. And lightening itſelf has been known to be attended with ſmall ſhakings ot the earth. So alſo *ignes fatui* in mines he looked upon as an argument

* Prieſtley, p. 324, 325. † Ibid. p. 368, 369.

that the electrie fluid was ſometimes collected in the bowels of the earth.

These are the chief arguments which Signior Beccaria uſes to confirm his hypotheſis. The others, which are common to him with Dr. Stukeley, I have purpoſely omitted, as it would be only repeating the ſame things twice over in the ſame diſcourſe. If any one however is inclined to a more particular examination of them, he may ſee his theory both of lightening and earthquakes explained at large in *Prieſtley's Hiſtory of Electricity*, p. 320—332, and 368—370.

Dr. Priestley, after laying down theſe theories, obſerves that * a more probable hypotheſis may perhaps be formed out of both of them. "Suppoſe (ſays he) the electric matter to be, ſome way or other, accumulated on one part of the ſurface of the earth, and, on account of the dryneſs of the ſeaſon, not eaſily to diffuſe itſelf; it may, as Signior Beccaria ſuppoſes, force its way into the higher regions of the air, forming clouds in its paſſage, out of the vapours which float in the atmoſphere, and occaſion a ſudden ſhower, which may further promote the paſſage of the fluid. The whole ſurface, thus unloaded, will receive a concuſſion, like any other conducting ſubſtance, on parting with, or receiving a quantity of the electric fluid. The ruſhing noiſe will likewiſe ſweep over the whole extent of the country. And, upon this ſuppoſition alſo, the fluid, in its diſcharge from the country, will naturally follow the courſe of the rivers, and alſo take the advantage of any eminences, to facilitate its aſcent into the higher regions of the air."

† The Doctor, making experiments with a battery on the paſſage of the electrical fluid over different conducting ſubſtances, and among theſe, over water;—and remarking a reſemblance between its paſſage over the ſurface of the water, and that which Dr. Stukeley ſuppoſed to ſweep the ſurface of the earth, when a conſiderable quantity of it is diſcharged to the clouds during an earthquake, immediately ſuſpected that the water over which it paſſed, and which was viſibly thrown into a tremulous motion, muſt receive a concuſſion reſembling that which is given to the waves of the ſea on ſuch an occaſion.

To try this, he himſelf and others preſent put their hands into the water, at the time that the electrical flaſh paſſed over its ſurface, and they felt a ſudden concuſſion given to them, exactly like that which is ſuppoſed to affect ſhips at ſea during an earthquake. This percuſſion

* Hiſt. Electricity, p. 370.

† Ib. P. 650, &c.

was

was felt in various parts of the water, but was ſtrongeſt near the place where the exploſion was made. The ſame experiment with a little variation being afterwards made with a ſingle jar, at ſome diſtance below the ſurface of the water, produced the like effect, though in a weaker degree. "This ſimilarity in the effect," the Doctor juſtly obſerves, "is a conſiderable evidence of a ſimilarity in the cauſe."

SEVERAL other experiments to the ſame purpoſe may be ſeen in the chapter from which theſe are taken, which though worthy of attention, it would carry me to too great a length to repeat. My reader however will not think me excuſed if I omit the following, which I ſhall tranſcribe in the Doctor's own words:

* "PLEASED with this reſemblance of the earthquake, I endeavoured "to imitate that great natural phenomenon in other reſpects; and, it "being froſty weather, I took a plate of ice, and placed two ſticks, "about three inches high, on their ends, ſo that they would juſt ſtand "with eaſe; and upon another part of the ice, I placed a bottle, from "the cork of which was ſuſpended a braſs ball with a fine thread. "Then, making the electrical flaſh paſs over the ſurface of the ice, "which it did with a very loud report, the nearer pillar fell down, "while the more remote ſtood; and the ball, which had hung nearly "ſtill, immediately began to make vibrations about an inch in length, "and nearly in a right line from the place of the flaſh.

"I AFTERWARDS diverſified this apparatus, erecting more pillars, and "ſuſpending more pendulums, &c. ſometimes upon bladders ſtretched "on the mouth of open veſſels; and at other times, on wet boards ſwim-"ming in a veſſel of water. This laſt method ſeemed to anſwer the "beſt of any; for the board repreſenting the earth, and the water the "ſea, the phenomena of them both during an earthquake may be imi-"tated at the ſame time; pillars, &c. being erected on the board, and "the electric flaſh being made to paſs either over the board, over the "water, or over them both. This makes an exceeding fine experi-"ment."

THESE are the principal hypotheſis which Philoſophers have formed concerning theſe awful appearances of nature. It would be arrogance in me to offer any thing by way of determining which of theſe is the moſt probable: that they are cauſed by the action of the electrical fluid, ſeems pretty well eſtabliſhed, and the agreement of the experiments with the facts themſelves affords as ſtrong a preſumption in favour of this ſcheme as can well be imagined.

* Hiſt. Electricity, p. 652, 653.

Were

Were I to take the liberty of giving my ſentiments on ſo difficult a ſubject (which I would do with all proper deference to the reſpectable names I have quoted) I cannot help thinking that there is not ſo great a contradiction between any one of theſe hypotheſis and another, but that they may be all in ſome meaſure true. As to that of Sir Iſaac Newton, Is it not poſſible that there may be actual fermentations in the bowels of the earth, as well as in the open air? Though it be granted that the earth is in general ſolid, it is equally certain that there are *ſome* cavities found in it; and however theſe may have been produced, they may afford ſufficient room for thoſe fermentations which Newton ſuppoſes. And as it is the opinion of Dr. Price,* that the electric matter in the clouds may be generated by the fermentation of ſulphureous vapours with mineral or acid ones in the air, is it not poſſible that the ſame may be the caſe in the bowels of the earth, and that this may give birth to thoſe ſulphureous effluvia and flaſhes of fire which are ſometimes obſervable in earthquakes. If this ſuppoſition be admitted, it may alſo account for thoſe ſulphureous lakes of water which, authors tell us, have ariſen in the place of cities and countries deſtroyed by ſuch convulſions. And with reſpect to Dr. Stukeley's remark, that earthquakes reach but a little way below the ſurface, and that ſuch ſuppoſed fermentations muſt take their riſe at an amazing depth, may they not take place much nearer the ſurface, and by expanding themſelves every way equally be the cauſe of theſe convulſions; or at leaſt produce ſo copious a diſcharge of the electrical fluid as ſhall be ſufficient for ſuch an effect? If this theory be true, Sir Iſaac Newton and the electrical philoſophers will differ no farther than that the former has aſſigned the remote, and the others the immediate cauſe of theſe appearances.

With reſpect to the different ſchemes of Dr. Stukeley and Signior Beccaria, they each ſeem ſufficient to account for thoſe ſhocks in which little alteration is made in the earth or atmoſphere. With regard to the former, it is eaſily conceivable, that the paſſage of a non-electric cloud near the ſurface of the earth when in ſo highly electrical a ſtate, ſhould throw it into a violent tremor, and perhaps be attended with ſeveral alarming circumſtances; it may alſo afford a ſolution of the appearances in the heavens, which frequently follow an earthquake; but the great difficulty is, how it ſhall account for thoſe earthquakes

* Prieſt. ib. p. 469.

which

which produce no alterations in the atmoſphere, as was the caſe with the earthquake which occaſioned this publication.

On Signior Beccaria's hypotheſis, indeed, ſuch an event is eaſily accounted for. When the earth is fraught with electricity, it may diſcharge itſelf in the ſame manner as a jar ſometimes does by the mere elaſticity of the fluid itſelf; in which caſe it is reaſonable to ſuppoſe, that the atmoſphere will undergo very little alteration. But as to the more deſtructive events of this kind, the ſcheme of Dr. Prieſtley ſeems the moſt probable; to which may perhaps be added, a hint taken from Mr. Canton;* that as the aurora borealis may be occaſioned by the flaſhing of electric fire from poſitive to negative clouds at a great diſtance in the upper part of the atmoſphere, where the reſiſtance is the leaſt; †earthquakes may be occaſioned by the flaſhing of the ſame fire from the earth to clouds electrified in an oppoſite manner in the lower part of the atmoſphere, and that the reſiſtance which it meets with is the cauſe of the concuſſion.

In this view of the ſubject then, all theſe different ſchemes may be true and conſiſtent. Sir Iſaac Newton's may be the remote, and thoſe of the other philoſophers the immediate cauſes. Dr. Stukeley's may reſolve thoſe vibrations of the earth which do not reach deep into its bowels, and are attended with alterations in the atmoſphere; Signior Beccaria's, thoſe in which the atmoſphere is not affected; and Dr. Prieſtley's, thoſe more alarming ones which bury whole cities in deſtruction, and convulſe the earth, the air, and the ſea. And it is not unlikely but earthquakes may ariſe ſometimes from the ſeparate agency of each of theſe cauſes, and ſometimes from all of them together.

My readers, I fear, will blame me for indulging myſelf in ſo large a field of theory; and thoſe of a philoſophical turn may regard my conjectures as equally viſionary and unimportant. Indeed, I acknowledge that I have little right to aſſume the character of a philoſopher: I propoſe my opinions with real diffidence; if they be falſe, my only comfort is, that like Phaeton, it may be ſaid of me—*Magnis excidit auſis.* But ſhould they prove any wiſe ſatisfactory to the intelligent part of the world, the only merit I can derive from them is that,

* Prieſt. p. 315, 316.

† After writing the above, I was pleaſed to ſee my conjecture ſupported by the authority of Dr. Prieſtley (Hiſt. of Elect. p. 470.) though at the time of writing it I did not know that any ſuch conjecture had been made.

Πολλακι τοι και μωρος ανηρ κατακαιριον ειπε.

Though I have already ſwelled this Eſſay much beyond what I deſigned; I cannot well cloſe it without giving ſome account of that event which has occaſioned the following ſermon.

On Sunday morning, Sept. 14th, 1777, at about fifty-five minutes paſt ten, the earthquake happened. The weather for near three weeks before had been remarkably ſerene and dry. The barometer was quite ſtationary, and the wind at ſouth and ſouth eaſt. In this ſtate the earth might be ſaid to be highly electrical. But contrary to one of Dr. Stukeley's obſervations on the earthquake at London; we had this ſummer very little thunder and lightening, though the air was ſometimes very hot and ſultry. Perhaps this very circumſtance of there having been ſo little lightening contributed the more to the accumulation of the electrical effluvia on the ſurface of the earth. One inſtance only to the contrary I was informed of; that about a fortnight before the earthquake, there was ſo violent a ſtorm of thunder and lightening at Chowbent, as beſides other miſchief, deſtroyed a conſiderable part of a vine which grew by the wall of a gentleman's houſe in that neighbourhood. I was at his houſe the day that the earthquake happened, and ſaw the vine which had thoſe branches cut off that had been injured by the lightening. Theſe were not more than ten feet above the ground.

Comparing this circumſtance with the earthquake, and the ſmall alteration which was made by it in the atmoſphere, it ſhould ſeem probable that it muſt have proceeded from the earth, according to Signior Beccaria's hypotheſis; the nearneſs of the lightening, and the ſtate of the earth both, affording a ſuſpicion that a great quantity of electric matter muſt have been drawn up to its ſurface, and needed nothing but a conducting ſubſtance to burſt out into an exploſion, or cauſe a concuſſion. What renders this the more probable, is, that the ſhock was felt full as ſeverely at that houſe as it was at Mancheſter, where it was generally thought to have occaſioned the greateſt alarm. The aurora borealis for ſome days before had been unuſually vivid; and about two months ſince, a water-ſpout fell at Huddersfield in Yorkſhire, which produced a dreadful inundation. The concurrence of all theſe circumſtances ſeems to point at the ſame cauſe. *

The

* It may, perhaps, be ſaid that the diſtance of time between theſe events is an argument that they are not really connected; but to any one who conſiders how long a time is

The ſhock was not violent. The utmoſt injury it did ſeems to have been, that it threw down a few chimneys, and alarmed people within doors. Many who were without did not feel it; and at one Place of Worſhip in Mancheſter, and ſeveral in the neighbourhood, it was ſo little perceived, as not to occaſion the leaſt emotion. But what is moſt ſurpriſing, is that though it was ſo ſlight, it extended to a compaſs of ground at leaſt one hundred and thirty miles in diameter. In the neighbourhood of Mancheſter it was felt pretty much the ſame as in the town. But at the extremities, as might be expected, it was felt very partially and weakly. Theſe were Liverpool, Lancaſter, York, Sheffield, Gainſborough, Nottingham, Leiceſter, Derby, and Cheſter. I am alſo informed that it reached to Birmingham and Glouceſter; and that at all theſe diſtant places it was felt at nearly the ſame moment.

The greateſt effect it had was upon Chatmoſs between Mancheſter and Warrington, which I hear was violently agitated. This circumſtance is the more to be regarded, as the water under the ſurface would naturally ſerve as a conductor; and, of conſequence, the ſhock occaſioned by the electrical fluid in paſſing through the ſurface to the atmoſphere would be more ſevere than any where elſe. The perfect agreement of this event with electrical experiments amounts to a ſtrong preſumption in favour of electricity being the cauſe of earthquakes.

As I was at that time engaged in Divine Service, I could not make any obſervations myſelf; (for though both the congregation and myſelf were alarmed, yet no body went out of the chapel, nor was the worſhip ſuſpended) and therefore I am obliged to depend on the beſt information I could get from others. This only I could obſerve, that the ſhock was preceded for a few moments by a noiſe ſomewhat reſembling the rattling of a great number of carriages driven at once over the pavement: and that the whole time which paſſed from the beginning of the noiſe to the end of the ſhock might be about ſix or eight ſeconds.

is neceſſary, even in the hotteſt ſummer to bring the earth and atmoſphere into a ſtate proper to produce a violent thunder-ſtorm, it will not be ſurpriſing that a much longer time ſhould be requiſite for an earthquake; nor is it at all wonderful, that while it is producing, and before it is completed, there ſhould ſometimes be exploſions of lightening, water-ſpouts and other appearances of an electrical nature, any more than that in charging a battery, or a ſingle jar, it ſometimes happens to diſcharge itſelf before the battery has received its full ſhare of the electrical fluid. For any thing we can tell it may require a long time to bring the earth into ſuch a ſtate of electricity as ſhall produce an earthquake: and perhaps it might be a problem worth conſidering, whether the moſt fatal earthquakes have not (cæteris paribus) been preceded by electrical phenomena, for a length of time proportioned to the violence of their action.

To me the ſhock ſeemed as one continued concuſſion; but many thought they could diſtinguiſh three ſeparate ſhocks. The circumſtance of the noiſe preceding the ſhock coincides with the obſervation of Dr. Stukeley on the ſame circumſtance attending the earthquake at London, and confirms his concluſion that the cauſe muſt be electrical.

The quickneſs of its progreſs, it being felt at places ſo diſtant at nearly the ſame moment, and extending to a ſurface of more than eight thouſand ſquare miles, is a ſtrong argument in favour of its ariſing from electricity: but what ſtrikes me as much as any thing, is the little hurt with which ſo extenſive a convulſion was attended; it appearing utterly impoſſible for mere fermentation without the aid of another more active principle, to ſhake ſo vaſt a compaſs, without exhibiting in ſome place or other deſtructive marks of its agency.

It is obſervable, that the earthquake was not accompanied with the leaſt ſulphureous ſmell, and (as I before remarked) with little or no alteration in the appearance of the atmoſphere, which continued equally ſerene after as before the ſhock. There were, indeed, a few light clouds floating in the air, but it ſeems moſt likely from the accounts I have received that they were there before the ſhock. Theſe circumſtances, as before hinted, make it probable that the fluid proceeded not from the air, but the earth.

The wind changed ſuddenly to the weſt, which perhaps may have been the direction in which the ſhock was conducted. This ſeems alſo to be an effect of electricity; for the wind did not continue long in that quarter, but ſoon after fell into its former direction. As the weather was before very calm, and the change in the wind was a ſudden guſt, it is not unlikely, but it might be of the ſame kind as the air which is felt from an electrical globe when excited. This, ruſhing into the vacuum formed by the ſhock, would for a time overcome the ſtill wind which before blew, till the force of electricity being ſpent, the wind would recover its former force and direction.

The water in the river at Mancheſter was obſerved to be conſiderably agitated. This may be accounted for on the principles before laid down by Dr. Stukeley.

To the ſame electrical principles may be aſcribed the painful feeling which ſome experienced, and myſelf particularly, which was plainly of the ſame kind as a violent ſhock given by a diſcharge of the Leyden phial. *

It

* I have received credible information of a boy who had been deaf upwards of a year, and has abſolutely recovered his hearing in conſequence of the earthquake. I have indeed

It was remarked, that the noiſe attending the ſhock was particularly loud at ſeveral houſes, which had electrical conductors; and that the day before the earthquake, an electrical machine collected more fire than it had been ever before known to do. Whether theſe circumſtances may lead to a determination of the nature of the cauſe is perhaps uncertain.

The weather, ſince the earthquake, has been, in general, remarkably fine; and were it ſpring, would doubtleſs, have greatly advanced vegetation; but the ſummer being late, and all vegetables, before the earthquake very backward, * it is not eaſy to determine what effect it has produced upon them. Its effect on the air is evident from the barometer; which immediately ſunk a few lines, during the ſhock, but ſoon after roſe one tenth of an inch above the point at which it had been ſtationary.

These are the principal circumſtances which I have been able to learn relative to this event: for moſt of which I acknowledge myſelf obliged to ſeveral ingenious friends, who have given themſelves the trouble of collecting them. If the concluſions I have drawn from their informations are warranted by the facts themſelves, this is all the merit I aſſume; but if they are not, I ſhould hope that their remarks may not be the leſs regarded on account of my erroneous deductions.

Let me above all expreſs my ſenſe of my obligations to Dr. Prieſtley, from whoſe Hiſtory of Electricity I have extracted the beſt remarks contained in this Eſſay. Indeed his great ſuperiority in almoſt every branch of ſcience, the inceſſant application which he has given to both religion and philoſophy, and the many uſeful publications by which he has benefited the world, call upon every friend to real learning for the warmeſt acknowledgements; and I am convinced, that I am not the only one who can with ſincerity declare, that whatever pretenſions I may make to knowledge, and whatever portion of liberality of ſpirit I may be ſaid to poſſeſs, (though I have much reaſon to confeſs my deficiency in both of theſe accompliſhments) they are both greatly owing to the ſtudy of his truly excellent and valuable productions.

deed never ſeen him, but can mention both his name and place of abode. As I have little doubt of the truth of this; will it not afford an additional argument in favour of electricity being the cauſe of earthquakes, ſuch cures having been known to follow electricity applied medically?

* Except about three weeks before the earthquake, during which time it was obſerved to be uncommonly vigorous.

Stand, Lancashire,
October 3d, 1777.

J. POPE.

THE RELIGIOUS IMPROVEMENT OF AWFUL EVENTS,

A

SERMON.

MATTHEW xxvii. 51.

And the earth did quake.

THESE words are part of that ſublime and awful deſcription which the Evangeliſt gives of the circumſtances attending the death of our bleſſed Saviour. After undergoing the moſt unjuſt and ignominous puniſhment, being condemned like a common malefactor, and hung like a ſlave upon the accurſed tree; after having been mocked and ſpit upon, and reviled in the very agonies of death, *He cried with a loud voice,*

and

and gave up the ghoſt. Then indeed the world ſaw the dignity of him, whom it had ſo unworthily treated: nature herſelf ſympathized in his ſufferings, and ſeemed to expire with her dying Redeemer. *The vail of the temple was rent in twain from the top to the bottom; and the earth did quake, and the rocks rent, and the graves were opened; and many bodies of the ſaints which ſlept, aroſe, and came out of their graves after his reſurrection, and went into the holy city, and appeared unto many.* The effect which theſe circumſtances had upon the minds of the ſpectators may be eaſily imagined. *The centurion, and they that were with him, watching Jeſus, when they ſaw the earthquake, and thoſe things that were done, feared greatly, ſaying, truly this was the Son of God.*

To a ſceptical philoſopher, perhaps, ſuch a conviction may appear the effect either of fear or ſuperſtition; and he may fancy that there is no real connexion between the events, and the point which they are intended to prove; he may ſay too, that extraordinary caſes being no more an evidence of Divine Power, than the common courſe of nature, are therefore not fitted for producing any greater conviction; and that the events which attended the death of Chriſt might have happened as much at any other time, or if he had not died at all: But certainly ſuch cavils as theſe can have little effect with the unprejudiced

and

and ſenſible; who, without regarding ſubtleties which are ſcarcely convincing to him who advances them, will eaſily ſee, that though a ſingle fact might come to paſs without having a reference to any thing of this nature; yet, ſuch a coincidence of circumſtances, ſuch a concurrence of judgments, ſo rapid a ſucceſſion of the moſt unexpected events, events themſelves the moſt wonderful which could be conceived, and arriving in a manner the moſt calculated to ſtrike on the hearts of the beholders, could be nothing leſs than the voice of God himſelf, declaring plainly the dignity of *his* character, at whoſe departure, nature itſelf ſeemed to be oppreſſed with the pangs of immediate diſſolution.

As the experience of theſe ſtupendous effects gave ſo ſenſible an alarm to thoſe who were preſent at our Lord's crucifixion, and compelled them to acknowledge the divinity of his character; it may be juſtly expected, that when any caſes of this ſort happen, they muſt ſtrongly awaken all who are concerned, to a proper application of them. Not but every other event which comes to paſs in the world has a tendency equally moral and religious; but the minds of men are ſo immerſed in their temporal concerns, that the frequency and regularity of the common courſe of things, in a manner render them inattentive, and it becomes ſometimes neceſſary to rouſe them by inter-

poſitions of a more extraordinary, and on that account, of a more alarming nature. One of theſe, you have been lately preſented with: and the emotions which you all felt on the occaſion, were, doubtleſs, ſuch as made you more immediately direct your thoughts to the great cauſe from whence it aroſe, than the common events of life; how convincing ſoever they might otherwiſe be, of the power, wiſdom, and goodneſs of the Almighty Author.

The firſt ſentiments, indeed, which occur to our minds, on ſuch occaſions, are generally thoſe of the Divine Power. When the operations of nature proceed in a regular ſeries, day ſucceeding night, and ſummer ſucceeding winter; when the ſame appearances take place at the ſame ſeaſons, we are apt to overlook the argument they afford of the continual agency of the Divine Governor, and to ſuſpect that all theſe things are not ſo very wonderful as they really are: but when we ſee this order interrupted, and ſtorms and tempeſts ſhake the world; when the red lightning glares from pole to pole, and the earth trembles at the preſence of the Lord; we are then compelled to cry out, Who is like unto God? *who removeth the mountains, and they know not, and who overturneth them in his anger! Who ſhaketh the earth out of her place, and the pillars thereof tremble!*

And certainly we may juſtly regard it as the intention of the Almighty, that theſe events ſhould produce ſuch effects on the minds of men, in order that thoſe ſentiments, which otherwiſe might be in danger of being obliterated, may from time to time be renewed afreſh, and recover their former aſcendency. In the general circumſtances of life, what contributes more than proſperity to make us forget God; and what more than adverſity to bring us back to him? When our affairs proceed in every reſpect agreeably to our wiſhes, and we advance to a ſuperiority over our fellow-creatures; how often do we flatter ourſelves, that it was our own hand, and our own ability which has got us this happineſs? Nebuchadnezzar in his affluence, how vain and ſelf-ſufficient was he? —*Is not this great Babylon which I have built for the houſe of the kingdom, by the might of my power, and for the honour of my majeſty?*—He had forgotten (as we ourſelves are too apt to do) that the greateſt and the mightieſt of men are mere inſtruments in the hand of God, and tenants at will of the affluence with which they are favoured;—and both want to be inſtructed by the iron rod of adverſity, that it is God only who ruleth in the world, that *his eye beholdeth the nations*, and it is his power which preſerveth their proſperity.—God forbid, that we ſhould learn by the ſame judgments as that haughty prince, how dependent is our condition, and how little right we have

have to call any thing our own. *He was driven from men; he eat graſs as oxen; his body was wet with the dew of heaven; till his hairs were grown like eagles' feathers, and his nails like birds' claws.* And this awful puniſhment continued upon him, till he learned from his ſufferings *to praiſe and extol the King of Heaven, all whoſe works are truth, and his ways judgment; and thoſe that walk in pride, he is able to abaſe.*

In the ſame view we may regard thoſe viſitations with which God alarms the ſons of men. They teach them to fear that power which nothing can eſcape, and avoid that vengeance of which all nature is ready to be the executioner. What an awe do they impreſs upon us of that omnipotence which *maketh the clouds his chariot*, which *rideth upon the wings of the wind*, and whoſe word ſtorms and tempeſts, and earthquakes fulfil?—O did men but conſider on ſuch awful ſeaſons as theſe, what a might that is, which tears up the earth from its foundations, which darts along the lightnings, and hurls the irreſiſtible thunder; which ſtrikes the impious dead with a ſtroke, and *commands the ſun himſelf that he ſhall not ſhine*; how would they dare lightly to *take his name in vain*, and wantonly ſport with that Majeſty, which alone is almighty and everlaſting?

But the infinite power of God is not the only attribute to the conſideration of which the view of his judgments has a tendency to lead us. His wiſdom and providence, his gracious love, and paternal care of his creatures are ſuggeſted to us with the ſame force as his omnipotence. You need not be told, my brethren, that, in the bowels of the earth, and indeed in every element, there are innumerable particles of ſo noxious a nature, as, left to themſelves, would deſtroy the order of the univerſe. Now certainly, it cannot but be acknowledged with the higheſt gratitude, as an inſtance of great kindneſs and mercy, that notwithſtanding ſuch a tendency of the various conſtituent parts to encroach on each other, there is ſo juſt an equilibrium preſerved, that all are made to act in the moſt admirable connexion, and with the moſt conſummate harmony. After all the complaints, which the unphiloſophical and irreligious make of the evils which infeſt the world, the utmoſt arguments they can produce are taken from events which ſeldom happen, and which, even when they do happen, may be demonſtrated to be productive of greater advantage than evil. Thus winds and tempeſts, ſtorms and lightning clear the air from pernicious vapours, and render it fit for reſpiration; volcanos afford a vent for the noxious effluvia, which would otherwiſe become peſtilential; and earthquakes themſelves,

ſelves, with all their horrors, throw up beds of mineral ſubſtances,* which are eminently ſubſervient to the neceſſities and conveniences of life. Did theſe evils, indeed, frequently happen, even in thoſe places which are the moſt ſubject to them, we might make ſome allowance for ſuch complaints; but as this is ſo far from being the caſe, that they are, on the contrary, the moſt rare and extraordinary events which are obſerved to take place; we ought much rather to return thanks to God, that he provides

* I AM indebted to Dr. Franklin for the above obſervation, who, in a letter to Sir John Pringle (occaſioned by the Doctor's having read Mr. Mitchell's Paper on the Strata of the Earth) expreſſes himſelf in the following terms.

"THE reading of it (Mr. Mitchell's Paper) and peruſal of the draught that accompanies it, have reconciled me to thoſe convulſions which all Naturaliſts agree this globe has ſuffered. Had the different ſtrata of clay, gravel, marble, coal, lime-ſtone, ſand, minerals, &c. continued to lie level, one under the other, as they may be ſuppoſed to have done before thoſe convulſions, we ſhould have had the uſe only of a few of the uppermoſt of the ſtrata, the others lying too deep and too difficult to be come at; but the ſhell of the earth being broke, and the fragments thrown into this oblique poſition, the disjointed ends of a great number of ſtrata of different kinds are brought up to day, and a great variety of uſeful materials put into our power, which would otherwiſe have remained eternally concealed from us. So that what has been uſually looked upon as a *ruin* ſuffered by this part of the univerſe, was in reality, only a preparation, or means of rendering the earth more fit for uſe, more capable of being to mankind a convenient and comfortable habitation."

Franklin's Letters and Papers at the end of his Experiments on Electricity, p. 370.

us with ſuch a profuſion of bleſſings at ſo ſmall a coſt of ſuffering; than think hardly of him for a few uneaſineſſes, and which are counterbalanced by mercies ſo great and numerous, as no other ſcheme of Providence, perhaps, could have ever accompliſhed.

As to us who live in Great Britain, we have particular reaſons for grateful thankſgiving. Though the Almighty is juſtly regarded as the common parent and benefactor of men, of us he is peculiarly ſo. For we enjoy a greater ſhare of his favours, and feel fewer inconveniences than any others. Thoſe ſtorms of thunder and lightning, which harraſs other nations, and ſpread devaſtation through their cities, are little known amongſt us; and thoſe internal convulſions of the earth, which ſometimes bury thouſands in its bowels, are only heard of by foreign report. In all the annals of the Engliſh Hiſtory, we ſcarcely meet with any event of this kind, which can come into compariſon with the earthquake at Liſbon, about twenty years ſince. And, I may ſay, we never experienced ſuch a fate as the poor inhabitants of Lima and Callao, in the year 1747. The former of theſe events is recent in all your memories; but the latter (which indeed was far more dreadful) as ſome of you may have never heard of it, give me leave to preſent you with a ſhort account of.

LIMA is the richeſt and moſt commercial city of Spaniſh America. Its merchants carry on a trade with the whole world, and in ſplendour and opulence vie with our own countrymen themſelves. With them money is ſo plentiful, that, at a public entry of one of their viceroys, it ſaid, they paved the ſtreets through which he paſſed, with ingots of ſilver. But theſe advantages, great and enviable as we may think them, are counterbalanced by alarming earthquakes. In the year to which I refer, three fourths of the city were deſtroyed by a ſhock of this nature;—and Callao, the port town belonging to it, was with all its inhabitants utterly annihilated. One of them ſitting at the fort which commands the ſea, ſaw them running in the utmoſt conſternation from their houſes, which falling with horrid ruin, buried many in immediate deſtruction. The reſt who had eſcaped, thought themſelves ſafe; but the ſea, which had retired, as it were, to afford them a refuge, returned with redoubled violence, and ſwept away every ſoul in its waves. He only eſcaped, who was the ſpectator of this dreadful event; and this by a moſt remarkable interpoſition;---a boat being driven by the waves near the fort, he threw himſelf into it, and was the only one who remained alive to record this amazing viſitation of God's providence.

CONSIDER this ſubject then in the light in which religion

gion and true philoſophy teach us to regard it; and what gratitude think you is not due to that Being who has placed you in a part of the world where you are ſo little expoſed to theſe alarming apprehenſions?---You have ſeldom reaſon to dread *the peſtilence that walketh in darkneſs, or the deſtruction which waſteth at noon day.* You may lay yourſelves down to reſt, unharraſſed with the fears of what *the night may bring forth;* and riſe in the morning, pleaſed that the bed in which you ſlept is not made your tomb.---You ſcarcely know how great your bleſſings are. Thoſe are the beſt judges, who have experienced what it is to be deprived of them. And you may even regard this laſt viſitation of heaven, as a document, what ideas you ought to entertain of that paternal goodneſs which has ſo far favoured you above other nations, that you enjoy all their advantages, and have ſo few of thoſe miſeries of which they complain. By comparing our ſituation therefore, with that of others, and learning from their ſufferings to make a proper eſtimate, how large a pre-eminence we have obtained above them, we ought to be inſtructed, that the returns due to ſo gracious a Benefactor are to be as much greater than theirs, as the bleſſings we enjoy exceed thoſe with which they are favoured.

THESE are the ſentiments which ſuch awful viſitations ought to excite within us towards the Divine Being.

There are other leſſons alſo, equally uſeful, which they may teach us with reſpect to ourſelves.

When we conſider the various convulſions and tempeſts which happen in one part of the earth or the other, what can be a more natural, what a more juſt reflexion, than the vanity and fluctuating nature of all terreſtrial things? We have heard from time to time, of great changes made in many places; rivers have been turned into dry ground, and lands into ſeas, by the interpoſition of the Almighty; we are aſſured that the earth itſelf once experienced a total inundation; and that the time will ſoon come, when it ſhall undergo a much greater alteration than it has ever ſuffered. And ſhall we, when we view theſe things, perſiſt in ſuch an attachment to it, and be ſo wrapt up in its buſineſs and pleaſures, as to account it our *continuing city*, and when we are compelled to quit it, to do it with fear and reluctance? Can we read the accounts which hiſtory gives of the ravages which have been made in it, and yet wiſh to deceive ourſelves into the idea, that we may enjoy complete felicity in any thing it affords? We know that every particle of which it is compoſed, is ever changing its form and nature; we ſee the ſpecies of animate as well as inanimate beings, inceſſantly departing to give way to others; and ourſelves ſuddenly going off the active ſtage of life, to yield our

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places and poſſeſſions to thoſe whom we never knew, and with whom our memories will be loſt; and yet can we *labour after the meat which periſheth* with ſuch aſſiduity, as to neglect that *which endureth to life everlaſting?* How infatuated muſt be that mind, which ſeeing and experiencing that the utmoſt pains it can take to heap up this world's goods, are often inſufficient to accompliſh its purpoſe, and even when the moſt efficacious, are ſtill certain of ſharing the fate of the world itſelf, and periſhing together with it, will yet heap riches upon riches, and poſſeſſion upon poſſeſſion, inattentive to any of his more important wants, and unwilling to make that proviſion for them which God and nature deſigned! This is *a great and a ſore evil*; an evil, of which we are always complaining, and yet which we take the leaſt pains to ſurmount.

But it is not in our attachment to riches only, that we act contrary to the deſign of the Almighty. There are other poſſeſſions (if we may call them ſuch) in which we are too apt to place our felicity. Thus the parental affection will often lead a man to center his whole enjoyment in a favourite child, and indulge a fondneſs to him, ſometimes inconſiſtent with regards of a higher nature. Pity it is, that ſo amiable a weakneſs ſhould be worthy of blame. But none can be ignorant, that in all our regards,

gards, a proportion is to be obſerved between them and their objects. When therefore our deareſt affections are placed on what, from its very nature, may be preſently taken away from us, we lay up for ourſelves a fund of diſappointment, and are apt to blame Providence when the fault lies only in our own wrong apprehenſions. The Almighty is the only unperiſhable being in the univerſe; and he therefore is the only object on which we can place an abſolute dependence. While we enjoy our poſſeſſions therefore, and love our children, with this ſuperior regard to Him from whom they deſcended, we ſhall feel no miſery at their loſs, nor think hardly of that Providence which takes them back to himſelf; for we ſhall be ſenſible that ſevere as ſuch a trial may appear, it cannot be leſs than a righteous and a merciful viſitation; ſince it proceeds from a Being who has no intereſt to ſupport, ſeparate from that of his creatures. To him then, who conſiders, on the one hand, the univerſal changeableneſs and fluctuation of things; and ſees from the alterations which they continually meet with, that the whole earth itſelf will in the end be diſſolved; and on the other, the wiſdom, the power, and the goodneſs of that Being by whom theſe effects are produced, the reflexion of Job will naturally occur; *The Lord gave, and the Lord hath taken away: bleſſed be the name of the Lord.*

ANOTHER advantage of theſe reflexions is, that they fortify us againſt the fears of death. For why ſhould we be alarmed at leaving the world, when we muſt be convinced from the nature of all things, here, that they are daily tending to diſſolution? Our own bodies are made of the ſame materials with the earth itſelf; and as this is frequently in a diſeaſed ſtate, is torn with inward ſhocks, and ſometimes ſeems ready to expire; nay as we know that the period of its exiſtence will at length arrive; why ſhould we, in oppoſition to every thing with which unalterable experience preſents us, be deſirous to drag out a life, which cannot but be the more miſerable, by how much the longer it is protracted? Every object, with which we are acquainted, diſcourages ſo vain, and unreaſonable an expectation. Vegetable, and even inanimate productions, arrive gradually from imperfection to maturity, and after continuing in it that ſeaſon which is neceſſary to accompliſh the ends of Divine Providence, they decline, and die; and give place to others. Nor do I doubt, but the ſame obſervation may be made on many other parts of the creation; and thoſe not only on the ſurface and in the bowels of the earth, but in other regions likewiſe. Many a world has been created and deſtroyed; and many others are gradually tending to annihilation. The merciful Father of the univerſe brings them into exiſtence under this expreſs law; that they

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ſhall laſt ſo long as is neceſſary to anſwer the purpoſes of their creation, and that when they become uſeleſs, they ſhall exiſt no longer. We are born under the ſame law; and, complain as we may, it is a proof of goodneſs in the Supreme Author, that when we are become burdens to the earth, and he ſees that, from our age or ſituation, we ſhall be incapable (and he beſt knows who has created us, at what period our uſefulneſs will end) of being any longer bleſſings in the world, he removes us from the place we once poſſeſſed, and appoints others in our room.*

But this is the exuberant goodneſs of God, that when we are removed, we do not ſink like the dull earth into inactive non-exiſtence: our bodies indeed die, and are mixed with their common clay; but our vital, our intellectual, our ſpiritual part aſcends to that God who gave it. If we have diſcharged our duty here, and filled up our places with honour and integrity, we ſhall, on our removal, meet with new heavens, and a new earth, which

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will never end, nor ſuffer fluctuation; in which righteouſneſs and virtue will dwell and bloom for ever; which are enlightened with the pure rays of celeſtial light, and viſited by the benignant ſmiles of Almighty favour. Thoſe convulſions which we experience here, will then be regarded as briſk gales by a mariner at ſea; they will waft our veſſel the ſooner to its deſtined harbour, and put an earlier period to the labours and difficulties of the voyage. We ſhall then look back on the rocks which threatened us, and the calamities which ſeemed to impede our courſe, with the ſame ſatisfaction as thoſe who are ſafe on ſhore view the billows of the boiſterous ocean: and, tracing the plan of Divine Providence through all its intricacies, ſhall find our hearts exult in the feeling, and our minds ennobled by the knowledge, that the very evils of which we complain, are real goods in the hand of our great Conductor; that no other ſcheme could poſſibly have produced that weight of happineſs which attends us; and that, had we enjoyed what we once vainly accounted the means of felicity, the end would have been inevitable deſtruction. What muſt be the gratitude of a ſoul who has juſt entered the heavenly regions, when ſuch a proſpect as this is laid before him? How will his ſighs be turned into thankſgiving, and his anguiſh into unutterable joy! The view of this made St. John, deſcribing the ſaints who had ſuffered perſecu-

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tion, break out into that hymn of rapture, which he gives us in the book of Revelation: *After this, I beheld, and lo, a great multitude, which no man could number, of all nations, and kindreds, and people, and tongues, ſtood before the throne, and before the Lamb, clothed with white robes, and palms in their hands; and cried with a loud voice, ſaying, Salvation to our God, which ſitteth upon the throne, and unto the Lamb: And all the angels ſtood round about the throne, and about the elders, and the four beaſts, and fell before the throne on their faces, and worſhipped God, ſaying, Amen; Bleſſing, and glory, and wiſdom, and thankſgiving, and honour, and power, and might, be unto our God for ever and ever. Amen. And one of the elders anſwered, ſaying unto me, What are theſe which are arrayed in white robes, and whence came they? And I ſaid unto him, Sir, thou knoweſt. And he ſaid to me, Theſe are they which came out of great tribulation, and have waſhed their robes, and made them white in the blood of the Lamb. Therefore are they before the throne of God, and ſerve him day and night in his temple: and he that ſitteth on the throne ſhall dwell among them. They ſhall hunger no more, neither thirſt any more; neither ſhall the ſun light on them, nor any heat. For the Lamb which is in the midſt of the throne ſhall feed them, and lead them unto living fountains of waters; and God ſhall wipe away all tears from their eyes.*

BEFORE I conclude this diſcourſe, it may be proper to caution you againſt a miſtake which is too generally committed in ſimilar circumſtances to thoſe which have given occaſion to my preſent addreſs. And this is to attribute the afflictive interpoſitions of Divine Providence to a peculiar judgment againſt thoſe on whom they fall. The abſurdity, and indeed the wickedneſs of ſuch conduct, is too evident to need much proof. The abſurdity, becauſe many of thoſe viſitations which men are apt to conſtrue as judgments, equally involve the righteous and the wicked in the ſame ruin: and even when they do not, yet there are ſo many other circumſtances which attend them, and render it impoſſible to determine where the natural event ends and the judgment commences; that every application of this ſort muſt evidently appear to be totally groundleſs and unreaſonable. Now, from what we know of God's juſtice and wiſdom, it might certainly be expected, that, when he inflicts his judgments on any one, they ſhould be clearly known to be judgments, otherwiſe no end would be anſwered by them, either with reſpect to the offender himſelf, or to others who might be intereſted in ſo awful a viſitation. On the former, (as the deſign with which the ſuppoſed judgments were appointed could not, on this ſcheme, be diſcovered by him) they can by no means be expected to operate as motives to a reformation of his conduct; and as to thoſe

who are the ſpectators, how can it be imagined that they ſhould learn wiſdom from his example, when the example itſelf is of ſo uncertain and ambiguous a nature? And ſuppoſing they were ever ſo plainly declared to be Divine inflictions; ſuppoſing the objects of vengeance were ever ſo clearly pointed out; it is certainly rather a matter of alarm to us, that any ſhould be ſo notoriouſly wicked, as to call down a particular manifeſtation of Divine juſtice on their heads, than a ſubject of ſevere and bitter cenſure, frequently of jeſt and ſatyr, againſt the unhappy creatures who are thus marked out as enemies to the Almighty. But as it ſeldom happens that any one is ſo remarkably diſtinguiſhed, there is the leſs reaſon for thoſe reflexions which fall with ſo much cruelty and injuſtice on thoſe who have the misfortune to incur our reſentment. This may ſuffice as to the abſurdity of ſuch a procedure.

As to its wickedneſs, what can be more glaring, than that it is by far the moſt ſhocking manner in which we can expreſs the malignity of our diſpoſitions? To backbite and revile a fellow-creature, and to effect his ruin by holding him up to the contempt and hatred of the world, is deſervedly regarded as a great inſtance of injuſtice and meanneſs; but to ſlander him as the enemy of God himſelf, and repreſent the Divine Attributes,

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as all united to deſtroy him; what is it but to carry our injuſtice to ſuch a degree of enormity, as to make God himſelf a party in our trifling quarrels, and repreſent him as the ſame weak being as ourſelves, the reptiles of the earth? When I ſee a creature, with all the imperfections and ſins which can diſgrace human nature, (and ſuch are the perſons who are the moſt apt to give into theſe cenſures) pretending to uſurp the attribute of omniſcience, and to deal out God's judgments with the ſame wantonneſs as a madman throws about fire; when he cenſures thoſe whom he does not, and condemns thoſe whom he cannot know, I am apt to wonder, that he does not tremble leſt thoſe judgments which he ſo wickedly applies to others, ſhould fall with double terror on his own devoted head. Such unjuſt cenſures are condemned by our Lord in the moſt expreſs terms. When ſome who had been preſent at his diſcourſes, told him *of the Galileans whoſe blood Pilate had mingled with their ſacrifices*, and probably intimated that they thought it a Divine judgment inflicted upon them; Chriſt anſwers them in this manner: *Suppoſe ye that theſe Galileans were ſinners above all the Galileans, becauſe they ſuffered ſuch things? I tell you, nay; but except ye repent, ye ſhall all likewiſe periſh. Or thoſe eighteen, upon whom the tower in Siloam fell, and ſlew them, think ye that they were ſinners above all men that dwelt in Jeruſalem? I tell you, nay;*

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but except ye repent, ye ſhall all likewiſe periſh. This therefore is the view in which all Divine viſitations are to be regarded, not as judgments inflicted upon others, but as warnings and admonitions to ourſelves. They are to teach us not to cenſure their faults, but to reflect upon our own; not to condemn in another what may perhaps be really meritorious, but to alarm our own hearts, that they may be always awake to every good work; and in a word, the chief deſign of every Divine interpoſition is to inſtruct us to be continually on our guard, leſt that day which will cloſe the preſent ſcene of things, ſhould come upon us ſuddenly and unawares.

THE late viſitation of Divine Providence may naturally conduct our thoughts forward to that more awful event, which ſhall involve the whole world in one vaſt ruin; when the graves ſhall give up their dead, and all men ſhall appear before the tribunal of their Judge. The terror which appears in the countenances of the moſt timid themſelves, on the moſt alarming earthquakes which bury whole nations in deſtruction, is nothing compared to the conſternation which will then reign in the ſtouteſt heart of him who dared with ſeeming impunity to defy his Redeemer in this world. All that fortitude on which he now values himſelf, will then utterly forſake him; and he will call on thoſe mountains which

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are burſting with internal convulſions, to fall upon him, and cover him from the wrath of the Lamb. But how vain will be his prayer; how inevitable his puniſhment! The horrors of that day, great as they are, will be only a prelude to what will follow. After the ſentence is pronounced,—*Depart, ye curſed, into everlaſting fire, prepared for the devil and his angels*,—he goes to reap thoſe miſeries which are laid up for him againſt that dreadful ſeaſon.

THE good man, on the contrary, may view ſuch calamitous viſitations with hope and triumph. Though affected with compaſſion at the ſufferings of thoſe who are made partakers with him in diſtreſs, he may direct his thoughts from the preſent proſpect to that future one, which will be the commencement of his happineſs, and his introduction to glory. The events of that day will but the more diſplay his virtues, and render them the greater objects of Divine complacence and approbation. He is entered upon a ſtate where all his ſorrows are eternally paſt; and his enjoyments will be ever beginning. No diſtreſs, no ſatiety will ever come near him; in the company of bleſſed ſpirits, and in the friendſhip of God, he will go on from perfection to perfection, from felicity to felicity; and ſtill find new perfections and new felicities riſing before him.

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THIS is the portion of the ſaints: theſe are the ſentiments with which they may contemplate every convulſion, how dreadful ſoever it may appear to others. They know that their God is infinitely gracious; they feel that they are acceptable in his ſight; and are ſure from his own declarations, that *all things ſhall work together for good to them that love him, to them that are called according to his purpoſe.*

WHAT remains then, but that we attend ſeriouſly to the words of the Apoſtle? *Seeing that all theſe things ſhall be diſſolved, what manner of perſons ought we to be, in all holy converſation and godlineſs; looking for and haſting unto the coming of the day of God, wherein the heavens being on fire ſhall be diſſolved, and the elements ſhall melt with fervent heat? Nevertheleſs, we, according to his promiſe, look for new heavens, and a new earth, wherein dwelleth righteouſneſs. Wherefore, beloved, ſeeing that ye look for ſuch things, be diligent that ye be found of him in peace, without ſpot and blameleſs.*

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